



AFFIDAVIT

I, John Andrews, of 4 Burwardsley Way, Kingsmead, Northwich, Cheshire, CW9 8WN, England, a technical director of Cairn Holdings (UK) Limited, hereby state under oath as follows:

- 1.1 For the purpose of US Patent Application No.09/914,329, I commissioned Ceram Research Limited, of Queens Road, Penkhull, Stoke on Trent, ST4 7LQ, England to carry out tests on a number of settable mixtures of silica sand and liquid polybutadiene, where the sands were known to have various contents of aluminium oxide and ferrous oxide, the tests being carried out to determine the effects of these two chemical constituents, in various proportions, on the setting time of the mixture and its tendency to stain the surrounding substrate.
- 1.2 In particular, the tests were carried out to determine the effects of sands having an aluminium oxide content in excess of 2% by weight of the sand, and/or a ferrous oxide content in excess of 1% by weight of the sand.
- 1.3 The test method and results are given in the annexed Exhibit JA1. In Table 1 of JA1 sands entitled *Congleton HST 80* and *Messingham MS 65* contained in excess of 2% aluminium oxide, while sands *Garside No 21* and *Garside 2EW* contained in excess of 1% ferrous oxide.
- 1.4 As can be seen from Table 1, the final setting times of the mixtures containing the various sands differed considerably from one to another. Sands *Congleton HST 80*, *Messingham MS 65* and *Garside 2EW* all exhibited setting times in excess of 5 hours and all contained either an aluminium oxide content or a ferrous oxide content in excess of those defined in claim 1 of the patent application and thus outside the scope of the claim.
- 1.5 Similarly, sand *Garside No 21*, having a ferrous oxide content in excess of 1%, demonstrated a setting time of 2 hours 45 minutes. The shortest setting time was demonstrated by sand *Redhill T*, whose aluminium oxide content and ferrous oxide content were both within the maxima defined in claim 1 of the patent application.
- 2.1 In order to determine the staining effects on concrete paving units of a mixture containing these various sands, I carried out a test in which a 300mm x 300mm cast concrete paving unit was marked to divide it into six areas, one as a control area, and five others to receive, respectively, the mixtures containing the five sands to be tested.
- 2.2 For each mixture of sand and liquid polybutadiene the sand was thoroughly mixed by hand with 2.7% by weight of the liquid polymer until a homogeneous mass was formed. Each sample was pressed down onto one of the areas of the concrete paving unit and left for 15 minutes. After that period each sample was carefully swept around the designated area with a soft brush for approximately 60 seconds before being cleaned off the paving unit.

2.3 Annexed Exhibit JA2 is a photograph of the concrete paving unit taken prior to the test and divided into six substantially equal areas, one labelled "Control" and the others labelled with the names of the sands to be used in the tests, ie, *Redhill T*, *Congleton HST 80*, *Garside 2EW*, *Garside No. 21* and *Messingham MS65*.

2.4 Annexed Exhibit JA3 is a photograph of the concrete paving unit taken after the test was completed. In this exhibit it can be seen that staining has occurred in the areas labelled *Congleton HST 80*, *Garside 2EW*, *Garside 21* and *Messingham MS65*. No staining has occurred on the section labelled *Redhill T*, and similarly on the section labelled "Control" where no polymer/sand mixture was introduced.

2.5 It can be seen that all of the stained areas, and particularly those worst stained, i.e, those labelled *Congleton HST 80*, *Garside No 21* and *Messingham MS65*, with reference to Table 1 of Exhibit JA1, had received sands having either an aluminium oxide content in excess of 2% or a ferrous oxide content in excess of 1%. From this I concluded that both aluminium oxide and ferrous oxide in excessive amounts do cause staining of paving surfaces to which they are applied.

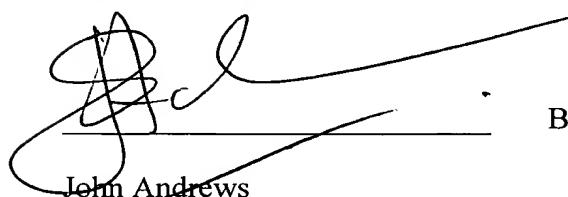
2.6 Again, the only polymer/sand mixture which did not cause staining was that containing sand *Redhill T*, having both aluminium oxide and ferrous oxide contents within the limits defined in claim 1 of the patent application.

3. From these two tests it is evident to me that setting times are increased, as is the occurrence of staining, with the use of silica sands having aluminium oxide and ferrous oxide contents in excess of those defined in claim 1 of the patent application.

4. In conclusion, therefore, it is essential for the product defined in the patent to contain a silica sand having chemical constituents within those specified in the patent application, and since silica sands can vary considerably in the proportions of such constituents, the inventive step is in the selection of sands as specified in claim 1 of the patent application.

Sworn at MOSS HASELHURST NORTHWICH CHESHIRE.

This 20th day of April 2006


John Andrews

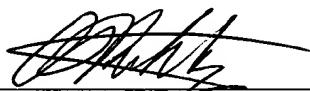
Before me: 

Solicitor entitled to administer oaths



Exhibit JA1 referred to in the Affidavit of John Andrews, dated

20th April 2006



Solicitor entitled to administer oaths

SUMMARY REPORT

A

JA 1

DETERMINATION OF FINAL SETTING TIME OF POLYMER-SAND MIXES

Certificate No. 0273. Test Reference: SW028.06 Issue Date: 10/03/2006

Introduction

A sample of GEO-fix SB Concentrate polymer and five sand samples were supplied by the client for determination of the final setting times of the polymer-sand mixes. The sand samples were designated as "Redhill T", "Congleton HST 80", "Garside No 21", "Messingham MS 65", and "Garside 2EW".

The purpose of the tests was to demonstrate the affect of the presence of high levels of Fe_2O_3 and Al_2O_3 on the setting time of the polymer-sand mixes.

Client

Cairn Holdings (UK) Ltd
PO Box 258
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Test Method

For each polymer-sand mix the sand was thoroughly mixed by hand with 2.7% by weight of the liquid polymer. The polymer-sand mix was then placed into a glass Petrie dish and the top surface levelled off and smoothed with a palette knife. Each sample was stored open on a laboratory bench at approximately 20°C prior to the tests being carried out.

The tests were carried out in accordance with BS EN 196-3:1995, with the first readings taken 1.5 hours after mixing, and then every 15 minutes until the polymer-sand mix had set.

The results of the tests are given in Table 1.

Test Results

Table 1
Final Setting Time

Sample Designation	Typical Fe_2O_3 Content (%)	Typical Al_2O_3 Content (%)	Final Setting Time (hours:minutes)
Redhill T	0.04	0.09	2:30
Congleton HST 80	0.25	2.17	>5:00
Garside No.21	1.71	0.13	2:45
Messingham MS 65	0.24	2.30	>5:00
Garside 2EW	6.29	0.03	>5:00

Authorised by:

Dave Dix (Project Manager)

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Exhibit JA2 referred to in the Affidavit of John Andrews, dated

20th April 2006

A handwritten signature in black ink, appearing to read "John Andrews".

Solicitor entitled to administer oaths



Exhibit JA3 referred to in the Affidavit of John Andrews, dated

20th April 2006

A handwritten signature in black ink, appearing to read "John Andrews".

Solicitor entitled to administer oaths